

### ABSTRACT

An electrically tunable radio frequency (RF) amplifier includes a resonant circuit having a voltage variable capacitance as one of its elements. In one approach, a drain diffusion capacitance of one of the transistors within the amplifier  
5 is used as the voltage variable capacitance. A voltage adjustment unit is provided to adjust a bias voltage on the voltage variable capacitance to change the capacitance value thereof and thus modify the operating frequency range of the amplifier. In one embodiment, the voltage adjustment unit also provides a power supply noise blocking function.

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